

Figure 1. FGF-20

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+1		F GTT CAA	E TGA ACT	AGA	.GA.	W ACTG ACGAC	Y GTA CAT	TAA 'ATT	T .CAC 'GTG	Y CTA GAT	S TTC	S ATC	N TAA ATT	I CAT	Y 'AT?	K. ATAA	H ACA TGT	TGG	D AGAC
+1	GAGCA	F GTT CAA	E TGA	AGA	.GA.	W LCTG	Y GTA CAT	TAA 'ATT	T .CAC	Y CTA GAT	S TTC	S ATC	N TAA	I CAT	Y 'AT?	K ATAA TATI	H ACA TGT	TGG	D AGAC TCTG
+1	GAGCA CTCGT	F GTT CAA 4	E TGA ACT 30	AGA TCT	GAA CTT	W ACTG GAC 440	Y GTA CAT	TAA ATT	T CAC GTG 45	Y CTA GAT 0	S TTC AAG	S ATC TAC	N TAA ATT	I CAT GTA	Y 'AT? .TA:	K ATAA FATT 470	H ACA TGT	TGG	D AGAC TCTG
	GAGCA CTCGT T G ACTGG	F GTT CAA 4 R CCG	E TGA ACT 30 R CAG	AGA TCT Y GTA	GAA CTT F	W ACTG CGAC 440 V	Y GTA CAT A	TAA ATT L ACT	T CAC GTG 45 N	Y CTA GAT 0 K CAA	S TTC AAG D AGA	S ATC TAG 4 G .CGC	N TAA ATT 60 T	I CAT GTA P	Y TATI TAC R	K ATAA FATT 470 D GAGA	H ACA TG1 G .TG0	TGG ACC A GCGC	D AGAC TCTG 480 R CAGG
	GAGCA CTCGT	F GTT CAA 4 R CCG	E TGA ACT 30 R CAG	AGA TCT Y GTA	GAA CTT F	W ACTG CGAC 440 V	Y GTA CAT A	TAA ATT L ACT	T CAC GTG 45 N	Y CTA GAT 0 K CAA	S TTC AAG D AGA	S ATC TAG 4 G .CGC	N TAA ATT 60 T	I CAT GTA P	Y TATI TAC R	K ATAA FATT 470 D GAGA	H ACA TG1 G .TG0	TGG ACC A GCGC	D AGAC TCTG 480 R CAGG
	GAGCA CTCGT T G ACTGG	F GTT CAA 4 R CCG GGC	E TGA ACT 30 R CAG	AGA TCT Y GTA	GAA CTT F	W ACTG CGAC 440 V	Y GTA CAT A A CGGC	TAA ATT L ACT	T CAC GTG 45 N	Y CTA GAT 0 K CAA	S TTC AAG D AGA	S ATC TAC 4 G GCC	N TAA ATT 60 T	I CAT GTA P	Y TATI TAC R	K ATAA FATT 470 D GAGA	H ACA TG1 G ACC	TGG ACC A GCGC	D AGAC TCTG 480 R CAGG
	GAGCA CTCGT T G ACTGG TGACC	F GTT CAA 4 R CCG GGC	E TGA ACT 30 R CAG GTC 90	AGA TCT Y GTA CAT	GAA CTT F TTT	W ACTG GAC 440 V TTGT AACA 500	Y GTA CAT A NGGC	TAA 'ATT L 'ACT	T CAC GTG 45 N TAA ATT 51	Y CTA GAT 0 K CAA GTT	S TTC AAG D AGA TCT	S ATC TAC G G GCC	N TAA ATT 60 T TAAC	I CAT GTA P TCC	Y 'ATI TA: R 'AA(K ATAA PATT 470 D GAGA STCT	H ACA TGT G .TGC	TGG ACC A GCGC GCGG	D AGAC TCTG 480 R CAGG GTCC 540
	GAGCA CTCGT T G ACTGG TGACC	F GTT CAA 4 R CCG GGC 4	E TGA ACT 30 R CAG GTC 90	AGA TCT Y GTA CAT	GAA CTT F TTT 'AAA K	W ACTG CGAC 440 V TTGT AACA 500	Y GTA CAT A NGGC	TAA 'ATT L 'ACT TGA _H_	T CAC GTG 45 N TAA ATT 51	Y CTA GAT 0 K CAA GTT 0	S TTC AAG D AGA TCT	S ATC TAC G G CGC GCC	N TAA ATT 60 T AAC TTC	I CAT GTA P TCC AGO	Y ATA TAC R (AA) FTT(K ATAA FATT 470 D SAGA STCT 530	H ACA TGT G TGC	TGG A A GCGC GCG R	D AGAC TCTG 480 R CAGG GTCC 540
+1	GAGCA CTCGT T G ACTGG TGACC S K TCCAA	F GTT CAA 4 R CCG GGC 4 R GAG	E TGA ACT 30 R CAG GTC 90 H GCA	AGA TCT Y GTA CAT Q TCA	GAA F TTT 'AAA K	W ACTG CGAC 440 V TTGT AACA 500 F	Y GTA A CGC CCG	TAA ATT L ACT TGA _H_ LACA	T CAC GTG 45 N TAA ATT 51	Y CTA GAT 0 K CAA GTT 0 L CTT	S TTC AAG D AGA TCT	S ATC TAG G GCC S R	N TAA ATT 60 T AAC TTC	I CAT GTA P TCC AGC	Y 'ATM 'ATM 'R 'IAA' 'IAA' 'OTT' D	K ATAA FATT 470 D SAGA STCI 530	H ACA TGT G TGC TACC	A GCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGC	D AGAC TCTG 480 R CAGG GTCC 540 V AGTT
+1	GAGCA CTCGT T G ACTGG TGACC	F GTT CAA R CCG GGC 4 R GAG CTC	E TGA ACT 30 R CAG GTC 90 H GCA CGT	AGA TCT Y GTA CAT Q TCA	GAA F TTT 'AAA K	W ACTG GAC 440 V TTGT ACA 500 F ATT	Y GTA A GGC A CCG T TAC	TAA ATT L ACT TGA _H_ LACA	T CAC GTG 45 N TAA ATT 51 F	Y CTA GAT O K CAA GTT O L CTT	S TTC AAG D AGA TCT	S ATC TAG G G G G G G G G G G G G G G G G G G	N TAA ATT 60 T JAAC 20 P JACC	I CAT GTA P TCC AGC	Y 'ATM 'ATM 'R 'IAA' 'IAA' 'OTT' D	X ATAA PATT 470 SAGA CTCT 530 P ATCC	H ACA TGT G ACC TGC	A GCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGC	D AGAC TCTG 480 R CAGG GTCC 540 V HAGTT TCAA
+1	GAGCA CTCGT T G ACTGG TGACC S K TCCAA	F GTT CAA R CCG GGC 4 R GAG CTC	E TGA ACT 30 R CAG GTC 90 H GCA	AGA TCT Y GTA CAT Q TCA	GAA F TTT 'AAA K	W ACTG CGAC 440 V TTGT AACA 500 F	Y GTA A GGC A CCG T TAC	TAA ATT L ACT TGA _H_ LACA	T CAC GTG 45 N TAA ATT 51	Y CTA GAT O K CAA GTT O L CTT	S TTC AAG D AGA TCT	S ATC TAG G G G G G G G G G G G G G G G G G G	N TAA ATT 60 T AAC TTC	I CAT GTA P TCC AGC	Y 'ATM 'ATM 'R 'IAA' 'IAA' 'OTT' D	K ATAA FATT 470 D SAGA STCI 530	H ACA TGT G ACC TGC	A GCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGC	D AGAC TCTG 480 R CAGG GTCC 540 V AGTT
+1	GAGCA CTCGT T G ACTGG TGACC S K TCCAA AGGTT	F GTT CAA 4 R CCGG GGC 4 R GAG CTC	E TGA ACT 30 R CAG GTC 90 H GCA CGT	AGA TCT Y GTA CAT Q TCA AGT	GAA F TTT AAA K GAA	W ACTG GAC 440 V TTGT ACA 500 F AATT TTAA 560	Y GTA A A AGGC TTAC	L ACT TGA LH LACA	T .CAC GTG 45 N TTAA ATT 51 .F .TTT1 !AAA 57	Y CTA GAT 0 K CAA GTT 0 L CTT GAA	S TTC AAG D AGA TCT	S ATC TAG G G G G G G G G G G G G G G G G G G	N TAA ATT 60 T JAAC 20 P JACC	I CAT GTA P TCC AGC	Y 'ATM 'ATM 'R 'IAA' 'IAA' 'OTT' D	X ATAA PATT 470 SAGA CTCT 530 P ATCC	H ACA TGT G ACC TGC	A GCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGC	D AGAC TCTG 480 R CAGG GTCC 540 V HAGTT TCAA
+1	GAGCA CTCGT T G ACTGG TGACC S K TCCAA AGGTT	F GTTT CAAA 4 R CCGG GGCC 4 R GAGG CTCC 5	E TGA ACT 30 R CAG GTC 90 H GCA CGT 50	AGA TCT Y GTA CAT Q TCA AGT	GAZ CTT F TTT AAZ K .GAZ	W ACTG CGAC V TTGT AACA 500 F AATT TTAA 560	Y GTA A CGGC CCG T TTAC LATG	L ACT TGA ATGT	T CAC GTG 45 N TTAA ATT 51 F ATTT TAAA 57	Y CTA GAT 0 K CAA GTT 0 L CTT GAA 0	S TTC AAG D AGA TCT P ACC	S ATO TAG G GCO S R TAG ATO	N TAA ATT 60 T AAC TTC 20 P SACC	I CAT GTA P TCC AGG V LAGG	Y YATA TAC R R IAAC TTC D CGG	K ATAA PATT 470 D SAGA CTCT 530 P ATCC TAGG	H ACA TGT G ACC TGC	A GCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGC	D AGAC TCTG 480 R CAGG GTCC 540 V HAGTT TCAA
+1	GAGCA CTCGT T G ACTGG TGACC S K TCCAA AGGTT P E CCAGA	F GTTT CAA 4 R CCGG GGCC 4 R GAGG CTC 5	E TGA ACT 30 R CAGGTC 90 H GCA CGT 50 Y GTA	AGA Y GTA CAT Q TCA AGT K CAA	GAPCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT	W ACTG CGAC V TTGT AACA 500 F AATT TTAA 560 L ACCCT	Y GTA A NGGC CCG TTAC LATG	L ACT TACA ACA ACA ACA ACA ACA ACA ACA AC	T CAC GTG 45 N TTAA ATT 51 F TTTT AAA 57 Y	Y CTA GAT 0 K CAA GTT 0 L CTT GAA T CAC	S TTC AAG D AGA TCT P 'ACC	S ATO TAG G G G G G G G G G G G G G G G G G G	N TAA ATT 60 T AACC TTG 20 P FACC TGG	I CAT GTA P TTCC AGG V IAGT GTC	Y (AT) (TA) (R (IAA) (FTT) (D (CGG) (CC) (NO)	K ATAA PATT 470 D SAGA CTCT 530 P ATCC TAGG 590	H ACA TGT G ACC TGC	A GCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGC	D AGAC TCTG 480 R CAGG GTCC 540 V HAGTT TCAA
+1	GAGCA CTCGT T G ACTGG TGACC S K TCCAA AGGTT	F GTT CAA R CCGG GGC 4 R GAG CTC 5 L ATT	E TGA ACT 30 R CAGGTC 90 H GCA CGT 50 Y GTA	AGA Y GTA CAT Q TCA AGT K CAA	GAPCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT	W ACTG CGAC V TTGT AACA 500 F AATT TTAA 560 L ACCCT	Y GGTA A CGGC CGGC TTAC LATG	TAAA L LACT TGA LIACA STGT M CGAT	T CAC GTG 45 N TTAA ATT 51 F ATTI CAAA 57 Y CGTA	Y CTA GAT 0 K CAA GTT 0 L CTT GAA T CAC	S TTC AAG D AGA TCT P ACC TGG	S ATO TAG GCC S R TAG ATO S AT	N TAA ATT 60 T AACC TTG 20 P FACC TGG	I CAT GTA P TTCC AGG V IAGT GTC	Y (AT) (TA) (R (IAA) (FTT) (D (CGG) (CC) (NO)	K ATAA PATT 470 D SAGA CTCT 530 P ATCC TAGG 590	H ACA TGI G TGC YACO E EAGA	A GCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGCGC	D AGAC TCTG 480 R CAGG GTCC 540 V HAGTT TCAA

Figure 2. FGF-23

1	ATGCGCCGCCTGTGGCTGGCCTGGCCTGCTGCTGGCGCGGGCGCCGGACGCC	60 20
61	GCGGGAACCCCGAGCGCGCGGGGACCGCGCACCTGGAGGGCGACGTG	120
21	A G T P S A S R G P R S Y P H L E G D V	40
121	CGCTGGCGGCGCCTCTTCTCCTCCACTCACTTCTTCCTGCGCGTGGATCCCGGCGGCCGC	180
41	R W R R L F S S T H F F L R V D P G G R	60
	GTGCAGGGCACCGCTGGCGCCACGGCCAGGACAGCATCCTGGAGATCCGCTCTGTACAC V Q G T R W R H G Q D S I L E I R S V H	240 80
241	GTGGGCGTCGTGGTCATCAAAGCAGTGTCCTCAGGCTTCTACGTGGCCATGAACCGCCGG	300
81	V G V V V I K A V S S G F Y V A M N R R	100
301	GGCCGCCTCTACGGGTCGCGACTCTACACCGTGGACTGCAGGTTCCGGGAGCGCATCGAA	360
101	G R L Y G S R L Y T V D C R F R E R I E	120
361	GAGAACGGCCACAACACCTACGCCTCACAGCGCTGGCGCCGCCGCGGCCAGCCCATGTTC	420
121	E N G H N T Y A S Q R W R R R G Q P M F	140
	CTGGCGCTGGACAGGAGGGGGGGGGGCCGGCCAGGCGGCGGACGCGGCG	480 160
	TCCGCCCACTTCCTGCCCGTCCTGGTCTCCTGA 513 (SEO ID NO: 3) S A H F L P V L V S * 171 (SEO ID NO: 4)	

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Fgf-21
        MAPLAEVGGF LGGLEGLGQQ VGSHFLLPPA GERPPLLGER RSAAERSA.R
  fqf-9
        MAPLGEVGNY FGVQDAV. P FGNVPVLPV. .DSPVLLSDH LGQSEAGGLP
        ~~-MAEVGGV FASLDWDLHG FSSSLGNVPL ADSPGFLNER LGQIEGKLQR
 fqf-16
 fgf-22
xfqf-20
        MAPLADVGTF LGGYDALG.Q VGSHFLLPPA KDSPLLFNDP LAQSERLS.R
 fgf-21 GGPGAAQLAH LHGILRRRQL YCRTGFHLQI LPDGSVQGTR QDHSLFGILE
  fgf-9
        RGPAVTDLDH LKGILRRRQL YCRTGFHLEI FPNGTIOGTR KDHSRFGILE
 fgf-16 GSP..TDFAH LKGILRRRQL YCRTGFHLEI FPNGTVHGTR HDHSRFGILE
 xfgf-20 SAP..SDLSH LQGILRRRQL YCRTGFHLQI LPDGNVQGTR QDHSRFGILE
 fgf-21 FISVAVGLVS IRGVDSGLYL GMNDKGELYG SEKLTSECIF REQFEENWYN
  fgf-9 FISIAVGLVS IRGVDSGLYL GMNEKGELYG SEKLTQECVF REQFEENWYN
 fgf-16 FISLAVGLIS IRGVDSGLYL GMNERGELYG SKKLTRECVF REQFEENWYN
        SYSVAVAMVT TRGVASRLYL DSNHKGDLYA SVRLAQESVF WGQSEENWSY
 fgf-22
xfgf-20 FISVAIGLVS IRGVDTGLYL GMNDKGELFG SEKLTSECIF REQFEENWYN
        TYSSNIYKHG DTGRRYFVAL NKDGTPRDGA RSKRHQKFTH FLPRPVDPER
 fgf-21
 fgf-9
        TYSSNLYKHV DTGRRYYVAL NKDGTPREGT RTKRHQKFTH FLPRPVDPDK
 fgf-16
        TYASTLYKHS DSERQYYVAL NKDGSPREGY RTKRHQKFTH FLPRPVDPSK
fgf-22
        THSSNLYKHV DTRRRYYVPL NQGATPSAGT RSLRRQNYTH VLPRPVDPDK
xfgf-20
       TYSSNLYKHG DSGRRYFVAL NKDGTPRDGT RAKRHOKFTH FLPRPVDPEK
 fgf-21
        VPELYKDLLM YT*
                         (SEQ ID NO: 2)
                        (SEQ ID NO: 5)
 fgf-9
       VPELYKDILS QS*
                       (SEQ ID NO: 6)
fgf-16
       LPSMSRDLFH YR*
 fgf-22 VPELYKDILS QS*
                       (SEQ ID NO: 7)
(SEQ ID NO: 8)
xfgf-20 VPELYKDLMG YS*
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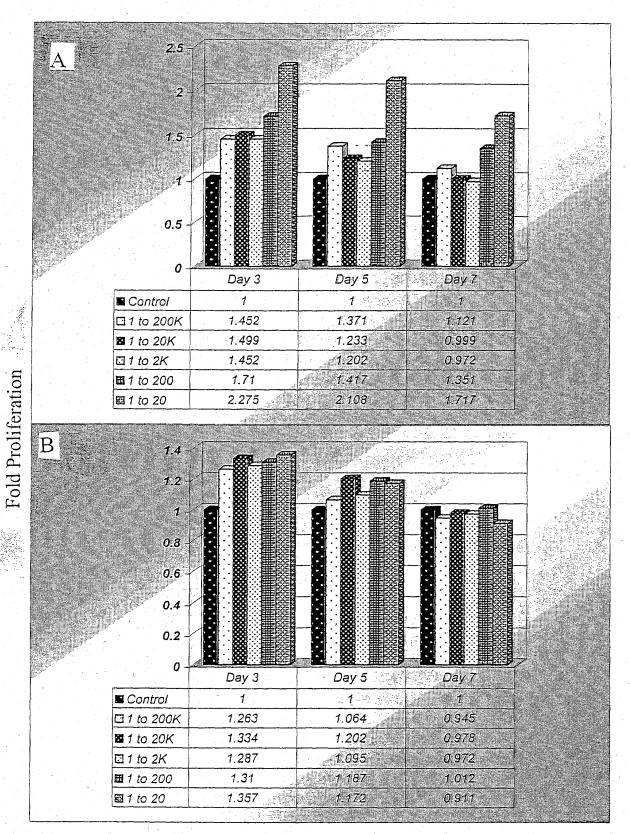


FIG. 4

FIG. 5

FIG. 6A

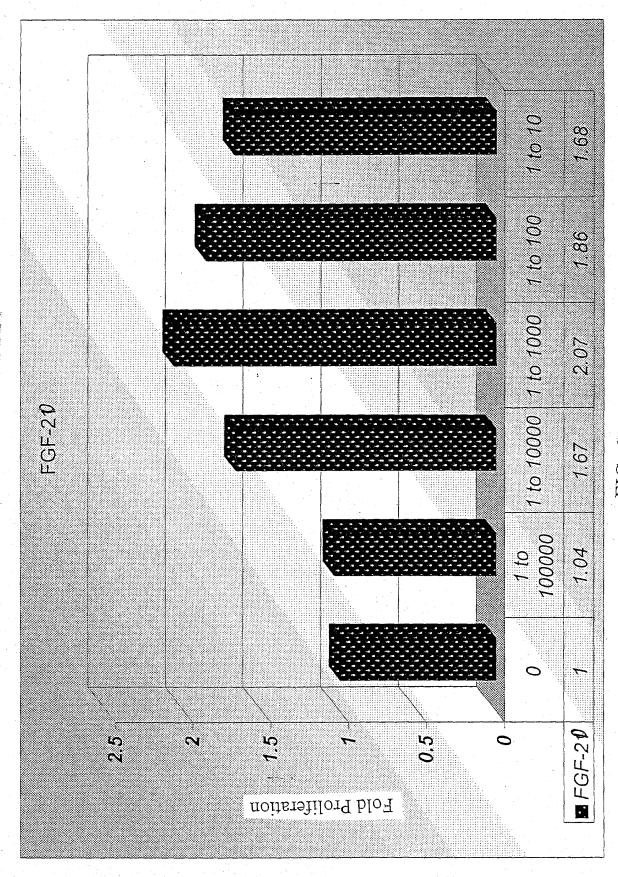


FIG. 6B

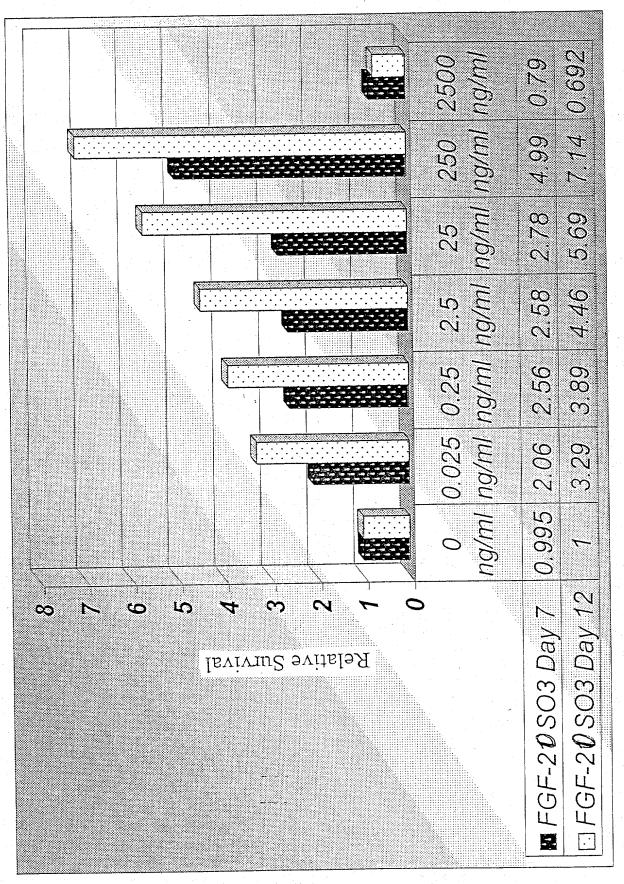


FIG. 7A

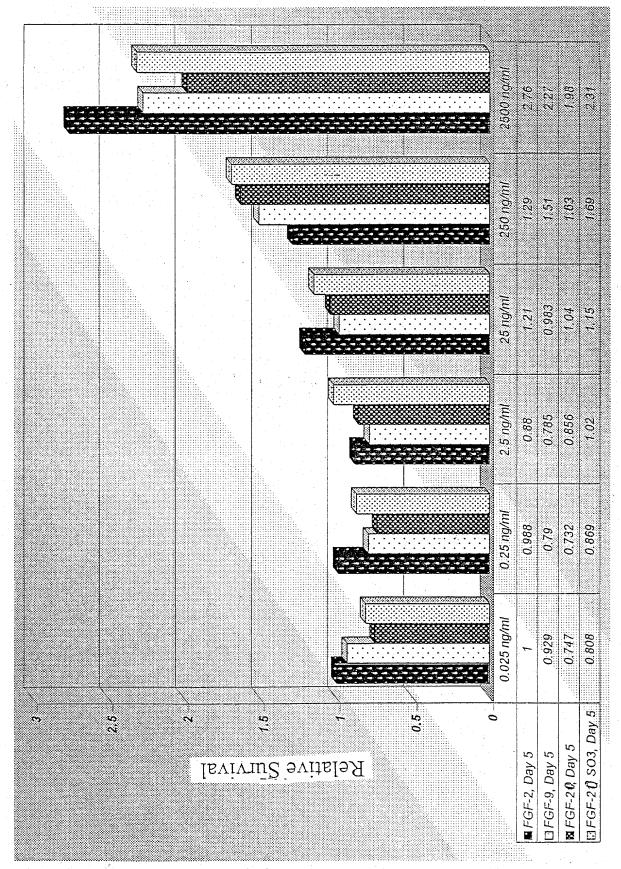


FIG. 7B

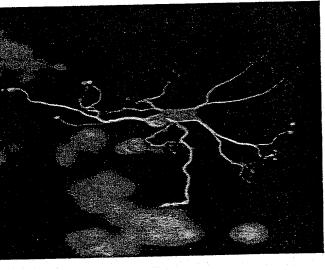


FIG. 8

Primary Rat Neurons Treated with Growth Factors for 5 Days

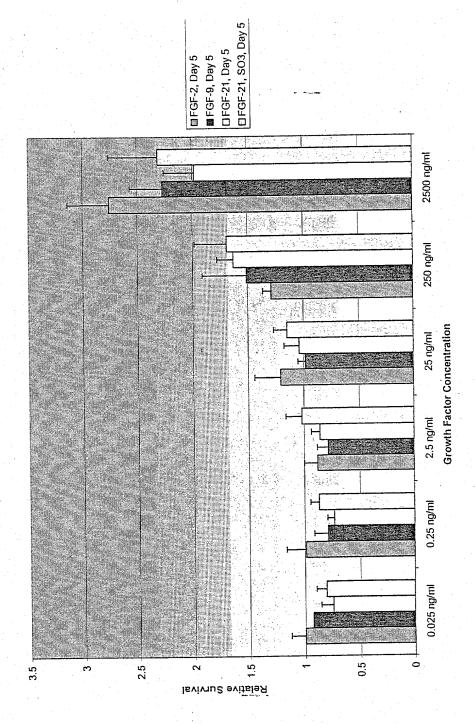


FIG. S